IN THE CLAIMS

This listing of claims will replace all prior versions, and

listings, of claims in the application:

Listing of Claims:

1.(Currently Amended) ~~Method~~ A method of position

determination in a radio system, the method comprising the acts of:

~~correlating~~ multiplying a signal received ~~at a unit~~ by a

multiplier with a carrier signal from a carrier generator to form a

mixed down signal;

correlating the mixed down signal with a replica signal ~~at the~~

~~unit, and~~ from a code generator to form a correlated signal;

processing the correlated signal with an ~~optimisation~~

optimization function comprising an exponential term in combination

with a second term to form an output signal that provides a

position measurement in indoor environments with multiple diffuse

reflections; and

feeding back the output signal to control the carrier

generator and the code generator for improving accuracy of the

position measurement.

2. (Currently Amended) A The method according to claim 1

wherein the exponential term is in the form $Be^{-\alpha t}$.

3. (Currently Amended) A The method according to claim 1

wherein the second term is of the form:

$$\tau_0 \sqrt{\left(1 - \frac{\tau_0^2}{t_2}\right)} .$$

Claim 4 (Canceled)

5. (Currently Amended) A The method according to claim 1,

further comprising the act of fitting the optimisation optimization

function and a Line-of Sight correlation function with a set of

parameters.

Claim 6 (Canceled)

7.(Currently Amended)   A-The method according to claim 1

comprising first operating a multipath mitigation technique to

effect correlation of the received and replica signals.

8.(Currently Amended)   A-The method according to claim 5 claim

7, wherein the multipath mitigation technique comprises a Multipath

Estimating Delay Locks Loop technique.

9.(Currently Amended)   A--The method according to claim 5 claim

7, wherein the multipath mitigation technique comprises a Minimum

Mean Square Error technique.

10.(Previously Presented)   A computer program product directly

loadable into the internal memory of a digital computer, comprising

software code portions for performing the method of claim 1 when

said product is run on a computer.

11.(Previously Presented)   A computer program directly

loadable into the internal memory of a digital computer, comprising

software code portions for performing the method of claim 1 when

said program is run on a computer.

Claims 12-13 (Canceled)

14.(Currently Amended) ~~Apparatus~~ An apparatus for position

determination of a radio system, the apparatus comprising:

a carrier generator for providing a carrier signal;

a multiplier for multiplying a received signal with the

carrier signal to form a mixed down signal;

means to correlate a ~~signal received at a unit~~ the with a

replica signal and form a correlated signal; ~~at the unit,~~ and

a code generator to provide the replica signal; and

means to process the correlated signal with an ~~optimisation~~

optimization function comprising an exponential term in combination

with a second term to form an output signal that provides a

position measurement in indoor environments with multiple diffuse

reflections;

wherein the output signal is fed back to control the carrier

generator and the code generator for improving accuracy of the

position measurement.

15. (Currently Amended) ~~Apparatus~~ The apparatus according to claim 14 wherein the exponential term is in the form $Be^{-\alpha t}$.

16. (Currently Amended) ~~Apparatus~~ The apparatus according to claim 14 or 15 wherein the second term is of the form:

$$\tau_0 \sqrt{(1 - \frac{\tau_0^2}{t_2})} \; .$$

Claim 17 (Canceled)

18. (Currently Amended) ~~Apparatus~~ The apparatus according to claim 14, further comprising means to fit the ~~optimisation~~ optimization function and a Line-of Sight correlation function with a set of parameters.

Claim 19 (Canceled)

20. (Currently Amended) ~~Apparatus~~ The apparatus according to claim 14, further comprising means to first operate a multipath

mitigation technique to effect correlation of the received and

replica signals.

21.(Currently Amended)   ~~Apparatus~~ The apparatus according to

claim 20, wherein the multipath mitigation technique comprises a

Multipath Estimating Delay Locks Loop technique.

22.(Currently Amended)   ~~Apparatus~~ The apparatus according to

claim 20, wherein the multipath mitigation technique comprises a

Minimum Mean Square Error technique.